

#### **4.14 INTEGRATED ENVIRONMENTAL IMPACTS**

*WCS plans to license and construct the CISF in eight separate phases over the course of a 20 year period with operations beginning after the completion of Phase 1. Capacity for storage of approximately 5,000 MTUs of SNF and associated reactor related GTCC waste is planned in each of the eight phases. After the eighth phase is completed, approximately 40,000 MTUs of SNF and associated reactor related GTCC waste may be stored at the CISF. WCS analyzed the cumulative impacts for storing 40,000 MTUs of SNF and associated reactor related GTCC waste. This section evaluates the integrated impacts to the natural and human environment during periods when construction and operation are concurrent.*

*The cumulative environmental impacts for constructing and operating the CISF for all eight phases are analyzed throughout Chapter 4 of this Environmental Report. During Phase 1 of the project, the impacts from constructing the Security and Administration Building, Cask Handling Building, rail side track, and storage pads were analyzed. The highest volume of construction will be prior to operation when all access roads, parking, buildings, grading and drainage diversion berms are constructed. The environmental impacts associated with constructing Phase 1 of the CISF are bounding because the seven subsequent phases do not require construction of the Security and Administration Building, Cask Handling Building, and rail side track. The impacts of the seven subsequent phases would only include constructing the storage pads.*

*Once operation begins, the remaining canister storage pads will be constructed in several phases over the 20-year period. Integrated impacts would result from building pads while the facility is in operation. Integrated impacts are presented in Table 4.14-1 for areas in which there are potential impacts from construction affecting operations, and operations affecting construction.*

*The bounding case for integrated impacts assumes that every 2.5 years a phase is completed. The normal operational workforce is 10 people on average per shift. The construction workforce will range from 20 to 50 workers for 3 to 6 months at a time for a range of 20 to 50 construction workers building pads for 18 out of 30 months (60% of the 2.5 year period required to complete a phase).*

Land Use

*The impacts for land use due to construction and operation of the CISF and cumulative impacts are discussed in Section 4.1. WCS does not anticipate any additional integrated land use impacts due to the simultaneous construction and operation of different phases of the CISF.*

Transportation

*For transportation, the analysis in Section 4.2 considers impacts from construction and operation, including cumulative impacts from other nearby operations.*

*There are no anticipated integrated impacts to the rail since it will be used for transportation of canisters during operation but will not be used for construction of pads. There would be small integrated impacts to the local transportation system when construction and operation are concurrent due to the movement of operation workers commuting each day to the proposed CISF and due to the movement of construction workers commuting to the proposed CISF. It is anticipated the integrated impacts would be small since the construction will be on and off over the course of 20 years. The operations workforce is expected to have 30 workers distributed among 3 shifts per day using individual or light trucks. These workers could account for an increase of 60 vehicle trips per day on Texas Highway 176/ New Mexico Highway 234. The construction work force would be a maximum of 50 construction workers using individual vehicles, work trucks or cement trucks. These workers would account for an increase of 100 vehicle trips per day local roads for approximately 60% of one year or 7.2 months out of 12 months.*

Soils

*There would be limited integrated impacts to soils since the entire site will be excavated and graded with caliche prior to operation.*

Seismic

*There will be no integrated impacts that will affect seismic conditions at the site.*

Water Resources: Surface

*There will be no integrated impacts that will affect surface waters since there are no surface waters at or near the site.*

Water Resources: Ground

*There will be no integrated impacts that will affect ground water since ground water will not be used at the site for construction or operation. There are no anticipated integrated impacts to groundwater quality since the aquifer is very deep and beneath a thick clay confining layer, so it should be unaffected from the small amount of effluents that might be produced during construction and operation.*

Ecological Resources: Vegetation

*There would be small adverse impacts to ecological resources as the impacts from the proposed CISF would be restricted to the site, and the proposed CISF takes up a small percentage of the habitat surrounding the site, thereby not significantly altering the impacts already existing from other local and regional activities.*

*There will be very small integrated impacts to vegetation since the site will be cleared prior to operation. Over the course of the 20 year period, some minor clearing may be required prior to pad construction.*

Ecological Resources: Wildlife

*There could be small integrated impacts to wildlife due to the simultaneous construction and operation of the CISF phases due to changed facility boundaries and other activities.*

Ecological Resources: Aquatic

*There will be no integrated impacts to aquatic life since there are no surface waters or wetlands near the site.*

Noise

*There would be small noise impacts because noise from activities at the proposed CISF would not impact any sensitive offsite receptors.*

*There will be small integrated impacts to noise since the most noise would be generated during canister handling operations or moving fences and pad construction; although it is anticipated that the noise impacts would be very small and the sensitive offsite receptors would be too far away to be substantially impacted.*

#### Air Quality

*There would be small integrated impacts to air from fugitive dust emissions during construction activities. Mitigation measures can be used to suppress the amount of dust in the air during construction. Dust emission will be reduced once earth moving activities cease and paved roads are constructed. There could be a potential for additional air quality impacts from the construction and operation of a proposed concrete batch plant.*

#### Historic and Cultural Resources

*There would be no integrated adverse impacts to cultural or historic resources. Evaluations conducted for the construction phase did not identify any archeological materials within the area of potential effects (APE), and no further work was recommended. Because the operations phase would not result in any new subsurface impacts, there would be no integrated impacts.*

*No historic resources were identified within the APE for indirect/visual impacts, which was buffered from the full project footprint. There would be no effects to historic resources in either the construction or operations phases; therefore there would be no integrated impacts to historic resources.*

#### Visual and Scenic Resources

*For visual/scenic resources, the analysis in Section 4.9 includes cumulative impacts from other nearby operations. WCS does not anticipate any additional integrated impacts to visual and scenic resources due to the simultaneous construction and operation of different phases of the CISF.*

#### Socioeconomics

*There would be minor socioeconomic integrated impacts. The input-output IMPLAN model used for the Socioeconomic Impact Analysis (SIA) for the proposed project evaluated the impacts of both the construction and operations phase. Although sequential construction campaigns would*

occur, the model used the initial investment of approximately \$16.1 million (including all excavation and grading, fencing, and security system costs, plus building sufficient storage pads for the first 200 storage systems).

Impacts of both the construction and operations phase were found to be economically positive, resulting in additional jobs that would also be higher paying than the average for the waste disposal sector in the region. Total 2013 employment in the three-county analysis region was 60,170 jobs. The 122 jobs (person-years of employment) generated by the initial construction phase of the project and the 912 person-years of employment for the operations phase represent a relatively small portion of regional employment. For periods when construction and operations are concurrent, there are likely to be additional construction-related employment opportunities beyond those accounted for in the model, as the IMPLAN analysis modeled only the initial construction phase. It is possible that workers initially employed for construction-related tasks would transition to operations-phase positions, although to a limited extent, due to differing skill sets. To the extent that competition could develop between the two sectors during concurrent periods, this dynamic could further increase wages for in-demand workers, a positive effect. The SIA also analyzed the impact of additional employment on the housing market, for both the construction and operation phases and found that the estimated number of units of available housing exceeded demand by a large margin. For periods when construction and operations would be concurrent, it is expected that the additional demand for housing could be absorbed by the market. In the context of the regional economy, overall integrated impacts related to socioeconomics would be minimal.

#### Environmental Justice

There would be no integrated impacts to Environmental Justice populations. Based on the data analyzed and the NUREG-1748 guidance applicable to that analysis, WCS determined that no further evaluation of potential environmental justice concerns was necessary for the project, including integrated impacts.

#### Public and Occupational Health

Public and occupation health cumulative impacts are discussed in Section 4.12.

*WCS analyzed the incremental and radiological impacts associated with storing 5,000 MTUs of SNF during Phase 1. The results of the analysis are presented in Chapter 9, Section 9.4.1.2 and Tables 9-5 and 9-6 of the WCS SAR. A separate analysis was also conducted to evaluate the radiological impacts associated with storing up to 40,000 MTUs. (NAC, 2015)*

*During construction of Phase 2, workers may be exposed to direct and scattered radiation from the SNF located on the Phase 1 storage pad. An analysis was performed to estimate the dose rate associated with storing 5,000 MTUs of SNF within the perimeter of Phase 1 Protected Area on workers constructing the next phase.*

*The WCS CISF includes NAC vertical concrete casks (VCCs) that would provide some shielding from the HSMs to dose points where the VCCs are between the HSM array and the dose point. No credit is taken for VCCs. The neutron and gamma source terms are based on the maximum source term allowed under the Certificate of Compliance or specific license for the HSMs and do not account for decay during storage or required prior to transportation at the originating site.*

*The analysis demonstrates that the dose rate approximately 600 ft from the center of Phase 1 was approximately 0.011 mSv/hr (1.1 mrem/hr). Thus, dose rates from the construction of Phase 2 after completion of Phase 1 would not be expected to exceed the dose rate limits of 0.02 mSv/hr (2 mrem/hr) for members of the general public at the perimeter of the Protected Area.*

*The anticipated dose rates during construction of Phases 3 through 8 are similar or less than those predicted to occur during construction of Phase 2, because the additional shielding provided by the loaded storage canisters and due to the increased distances from the loaded storage canisters and the storage pads under construction.*

*The results indicated that the maximum dose rates in the proximity of where the storage pads will be constructed during Phase 2 through Phase 8 are less than 0.02 mSv/hr (2 mrem/hr) as documented in WCS SAR Chapter 9 Tables 9-5 and 9-6 and Figures 9-1 and 9-2. Accordingly, the analysis that was performed demonstrates that the interaction of workers that would be involved during the construction of Phase 2 through Phase 8 would not be exposed to direct radiation from SNF in storage at Phase 1 exceeding the 0.02 mSv/hr (2 mrem/hr) and 0.5 mSv/y (50 mrem/y) limit for members of the public, as specified in 10 CFR 20.1302(b)(2)(ii).*

*For these reasons, the integrated impacts to public and occupational health would most likely be small. Canister handling operations and construction would not be occurring concurrently if it was not guaranteed that the dose rates were below 2 mrem/hr at the construction location. Implementation of the Radiation Protection Program procedures ensures that occupational doses are below the limits required by 10 CFR 20.1201 and are ALARA in all parts of the CISF for construction workers and operational workers.*

#### Waste Management

*Waste management cumulative impacts are discussed in Section 4.13. WCS anticipates any additional integrated impacts for waste management due to the simultaneous construction and operation of different phases of the CISF would be small.*

#### Summary of Integrated Impacts

*Table 4.14-1 summarizes the integrated impacts for the WCS CISF due to simultaneous construction and operation of different phases of the facility. The table also summarizes the construction and operation impacts that are discussed throughout this Chapter 4. As shown in this table, the integrated impacts would be small and only present in some resource areas. These integrated impacts do not affect the cumulative effects analysis in Section 2.6 and the analysis of cumulative impacts throughout the remainder of Chapter 4.*

**Table 4.14-1 Integrated Impacts**

	<b>Construction</b>	<b>Operation</b>	<b>Integrated</b>
<b>Land Use</b>	SMALL	SMALL	NONE
<b>Transportation</b>	SMALL	SMALL	SMALL
<b>Soils</b>	SMALL	SMALL	SMALL
<b>Seismic</b>	NONE	NONE	NONE
<b>Water Resources : Surface</b>	NONE	NONE	NONE
<b>Water Resources : Ground</b>	NONE	NONE	NONE
<b>Ecological Resources : Vegetation</b>	SMALL	SMALL	SMALL
<b>Ecological Resources : Wildlife</b>	SMALL	SMALL	SMALL
<b>Ecological Resources : Aquatic</b>	NONE	NONE	NONE
<b>Noise</b>	SMALL	SMALL	SMALL
<b>Air Quality</b>	MODERATE	SMALL	SMALL
<b>Historic and Cultural Resources</b>	NONE	NONE	NONE
<b>Visual and Scenic Resources</b>	MODERATE	MODERATE	NONE
<b>Socioeconomics</b>	SMALL	SMALL	SMALL
<b>Environmental Justice</b>	NONE	NONE	NONE
<b>Public and Occupational Health</b>	SMALL	SMALL	SMALL
<b>Waste Management</b>	SMALL	SMALL	SMALL